DOCUMENT RESUME

ED 144 940 95 SP 011 766

AUTHOR	Leinhardt, Gaea; And Others
TITLE	Autonomy In Education: A Research Approach.
INSTITUTION	Pittsburgh Univ., Pa. Learning Research and Development Center.
SPONS AGENCY	National Inst. of Education (DHEW), Washington, D.C.
PUB DATE	76
NOTE	60p.
EDRS PRICE	MF-$0.83 HC-$3.50 Plus Postage.
DESCRIPTORS	*Affective Behavior; *Educational Philosophy; Educational Research; *Fundamental Concepts; Individual Characteristics; *Locus of Control; *Personality Development; *Teaching Techniques
IDENTIFIERS	Self Awareness; *Student Autonomy

ABSTRACT

The authors provide in this study a paradigm for the systematic investigation of autonomy in education by reviewing the thinking and research on autonomy in philosophy, education, and psychology, all of which define, analyze and value autonomy in different ways. Significant issues surrounding autonomy and strategies for dealing with them are considered in order to help in developing an approach for examining autonomy in an educational setting. The investigation involves three phases: the first focuses on the environment and results in the generation of a list of behavioral opportunities for student autonomy to exist. The second focuses on the student and results in an estimation of individual differences with respect to the utilization of these opportunities. The final phase utilizes both environmental and student information and results in the development of situation-related measures of student autonomy. These measurement techniques are examined critically in order to delineate the constraints that instrumentation places on the subject. Finally, a schema for clarifying and limiting investigation is presented. An extensive bibliography is included. (Author/MJB)

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1976/22

AUTONOMY IN EDUCATION: A RESEARCH APPROACH

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Learning Research and Development Center

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1976

The research reported herein was supported by the Learning Research and Development Center, supported in part as a research and development center by funds from the National Institute of Education (NIE), United States Department of Health, Education, and Welfare. The opinions expressed do not necessarily reflect the position or policy of NIE, and no official endorsement should be inferred. The authors wish to thank several patient readers who read and commented on earlier versions of the work: Bill Cooley, Connie Faddis, David Lancy, Chuck Teggatz, and Lauren Resnick.

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to utilize these opportunities.[1] One arena in which individuals can be taught to act independently is the school. It is also our belief that school children cannot be taught independence in a vacuum separated from normal academic activities, but that they should be exposed to learning experiences that provide opportunities for autonomous behavior.

Educational settings vary in the degree to which they facilitate the task of teaching autonomy. For instance, a setting in which the teacher attempts to maintain an environment where all children behave similarly, i.e., study the same lesson for the same length of time under similar conditions, is not as useful a situation for teaching independence as is an individualized setting. Whether structured or open, individualized systems of instruction lend themselves well to the task of teaching independence because they permit the gradual, planned exposure of each student to situations requiring independent behavior. Individualized education not only lends itself to teaching independence, but also demands that independence be taught. Since the goal of individualization is adapting instruction to each student, the number and variety of decisions that must be made are greater than in a setting where instructional decisions are geared to the capabilities of the "average" child. By requiring that children share in this decision making, i.e., by encouraging them to take responsibility for their own choices, individualization can occur more effectively.

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[1] Throughout this paper, independence and autonomy will be used interchangeably. In a more subtle use of the term, independence could be viewed as the antonym of dependence. Where the latter is inappropriate or irrational reliance on other people, norms, or institutions for one's own actions, then independence would be irrational avoidance of help from people or institutions. Because the focus of this paper is on autonomy or rational and appropriate independence, we have chosen not to view independence as the opposite of dependence, but as a synonym for autonomy.

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The purpose of this paper is to provide a paradigm for the systematic investigation of autonomy in education. We proceed by analyzing what has been accomplished in the disciplines which have considered autonomy and by outlining important issues that have not been addressed. Concern about the autonomy of the individual emerges in fields such as political science, philosophy, education, and psychology. This concern is expressed in various forms--from broad theoretical discussions to reports of empirical research in limited and controlled settings. The more abstract work focuses on the relationship between an individual's autonomy and responsibility and on the problems of individual freedom versus societal needs. The empirical work ranges from studies that examine the environmental supports for independence to those that treat autonomy as a human personality characteristic. It is our task to go beyond what has been done by showing how the theoretical discussions of autonomy can be utilized in practical investigations in education and by systematically integrating the investigations of environmental opportunities for autonomy with studies of individual differences in autonomy.

Before delineating the scope and content of this paper, we should review what it is not. First, it is not a discussion of the differences between open and traditional forms of education. Although educational settings vary in the number of opportunities they offer, there is still a wide variety of environments in which autonomy can be learned. The identification of the best environments and teaching techniques must wait until further research findings are accumulated. Neither is this paper about the development of rugged individualism as opposed to cooperation as a personal behavior. Indeed, we view the development and exercising of social skills, such as cooperation and sharing, as compatible with the growth of autonomy in an individual.

This paper represents an effort to move toward a structure for investigating autonomy in the classroom. Various definitions of autonomy are summarized to aid in formulating an operational definition of autonomy. Significant issues surrounding autonomy and strategies for dealing with them are considered in order to help in developing our own approach for examining autonomy in an educational environment. Techniques for measuring autonomy are examined critically in order to delineate the constraints that instrumentation places on the subject. Finally, a schema for clarifying and limiting investigation is presented.

Definitions

In this section, we examine some major definitions of autonomy. The need to do this arises from the fact that autonomy tends to be a catch phrase for many disparate concepts. In order to undertake the study of autonomy in education, we need a broad but concrete specification of what is meant by the term. First, we discuss the more general theoretical descriptions of autonomy, then move to those definitions of independence within educational settings, and finally turn to the definitions that emerge from the related empirical research.

Theoretical Descriptions of Autonomy

Theoretical discussions do not result in definitions of autonomy per se, but they help to delineate some preconditions for considering autonomy. In these theoretical descriptions, philosophers discuss relatively isolated actions, whereas the psychologists that we consider later examine the accumulation of these actions. Descriptions of the conditions for autonomous activity emerge from philosophical consideration of two topics. The first issue is the relationship between responsibility and morality (see Aiken, 1962, Baier, 1970, Lessnoff, 1971, Rawls, 1971, Wolff, 1970). The second deals with the balance between an individual's freedom and the overriding needs and values of the total society (see Mill, 1859/1947, Rousseau, 1762/1963).

Autonomy as a prerequisite for personal responsibility. Philosophers discuss autonomy in their examinations of the relationship between morality and personal responsibility. They argue that to judge the morality of an individual's actions, consideration must be given to the degree to which the individual can or cannot be considered responsible for his or her actions. Responsibility depends, in turn, upon the degree to which an individual is acting autonomously. In other words, only in the case where an individual is acting autonomously can s/he be considered responsible for those actions. Then and only then can the morality of the action be examined. There are four conditions for considering a person's actions autonomous (a) the existence of at least one real alternative, (b) awareness of alternatives, (c) the right to choose among alternatives, and (d) awareness of the consequences of choice (see Baier, 1970, Montessori, 1917/1965, Rousseau, 1762/1963, Wolff, 1970). Each condition depends in part upon the previous one or ones in order for it to be realized. Thus, an individual who is not aware of available alternatives cannot be considered to act autonomously. The individual must be aware that s/he is not acting out of instinct or impulse but from choice (Baier, 1970). In other words, the individual must realize that s/he is selecting from among alternatives. Also, these alternatives for choice must be realistic. Without realistic opportunities to choose or knowledge of the right to choose, the individual's actions cannot be considered autonomous. And finally, the individual should be aware of the consequences of that choice, whether it is positive, negative, or neutral (see Baier, 1970, Wolff, 1970). Without such knowledge, the choice becomes vacuous or random.

The discussion of these preconditions for autonomy provides a framework for considering the degree to which a child is autonomous. Baier (1970) recognizes that while many choices may be made by children, they may not be aware of the alternatives or of the consequences of their choices. Further, Wolff (1970) points out that:

> Only because man has the capacity to reason about his choices can he be said to stand under a continuing obligation to take responsiblity for them. It is quite appropriate that moral philosophers should group together children and madmen as being not fully responsible for their actions, for as madmen they are thought to lack freedom of choice, so children do not yet possess the power of reason in a developed form. It is even just that we should assign a greater degree of responsibility to children, for madmen, by virtue of their lack of free will, are completely without responsibility, while children, in so far as they possess reason in a partially developed form, can be held responsible (i.e., can be required to take responsibility) to a corresponding degree. (pp. 12-13)

Assuming Wolff's position that children are only "partially developed" with respect to reason, the educator's task is to familiarize children with the conditions for autonomy. Children can be introduced to alternatives and taught how to select from among them by showing them how to gather relevant information about a particular situation. Rousseau (1762/1963) considers that a principle function of education is to give a child a perspective from which to analyze information. Once the child has this perspective, s/he can control the environment with greater facility. However, education that provides varying perspectives leads to still another definitional problem. It can be argued that the degree to which an individual is autonomous is the inevitable result of the social and educational conditions to which the individual has been exposed as a child. Consequently, since the individual is the way s/he is as a result of circumstances beyond personal control, then it is difficult to consider his or her behavior autonomous. Rawls (1971) discusses a related problem in his examination of morality. He suggests that if the process by which an individual becomes moral (autonomous) is itself a moral one, then the individual can be considered to be moral, regardless of the inevitability of that process. Rawls (1971) goes on to say that:

> Moral education is education for autonomy. In due course everyone will know why he would adopt the principles of justice and how they are derived from the conditions that characterize his being an equal in a society of moral persons. (p. 516)

Autonomy as a balance between individual freedom and societal needs. Autonomy is considered in philosophical discussions relating to the rights of society as a collection of individuals versus the rights of the individual alone. The proportion of individual rights to collective rights varies along a continuum. At one end of the continuum, there is little or no concern for the rights of the society, for the rights of the individual are deemed all important (Rousseau, 1762/1963). At the other end, an individual's autonomy is subsumed under the needs of the society. In other words, although the rights of the individual to be free are recognized, the rights of the total society outweigh those of the individual when they conflict (Mill, 1859, 1947).

According to Rousseau, the individual's actions should not be restricted by the society in which the norms are irrational and the values are incorporated within a power structure. Therefore, the purpose of education is to give each child the tools with which s/he can control or manipulate the environment.. On the other hand, Mill (1859/1947) considers independence from the point of view of the needs of the society, where society is an aggregate of individuals. Mill reasons that autonomy is desirable because it is good for the society to have independent, creative individuals. However, if individual autonomy interferes with the good of the social system, then it has to be restricted. Deciding whether an individual or society is infringing on the rights of the other is a matter of utility (the greatest good for the greatest number). As Mill (1859/1947) said, "I regard utility as the ultimate appeal on all ethical questions, but it must be utility in the largest sense, grounded on the permanent interests of man as a progressive being" (pp. 10-11).

Rousseau and Mill help to lay out some conditions for autonomy. By describing the psychological and intellectual tools an individual needs to declare and maintain independence, Rousseau focuses on conditions for the development and support of the autonomous person. Mill specifies the limitations or boundaries of personal freedom in the presence of the common good.

As we move towards a more concrete consideration of autonomy in the classroom, we find that these abstract, speculative concerns are helpful guides. The idea of responsibility to oneself and to a society has very real implications for education. Obviously, one of the tasks for educators is helping students realize where the boundaries of their freedom lie by pointing out where the rights of other individuals or the entire group of students take over. The educational environment is a subset of the total social environment. Of course, the educational setting is by its nature more defined and limited than the society at large, because a designated group of people has the appointed responsibility of planning, monitoring, and assessing the growth and learning of another group.

Applied Descriptions of Autonomy

We move now from a consideration of conditions required for autonomous action to the more focused problem of the development of an autonomous child and the types of educational situations that support that growth. This requires that we come to grips with the changing developmental nature of young humans. There are two major ways in which this has been approached: (a) Educational clinicians describe autonomy and discuss the kinds of school environments in which children learn to behave independently, and (b) developmental psychologists trace the growth of an individual with respect to autonomy.

Autonomy in educational settings. During the last three centuries, several educators emerged who shared common elements in their approaches to the education of young children. Dewey, Froebel, Montessori, Neill, and Pestalozzi all founded and worked in their own schools. While they all share a view of the child as a growing and dynamic entity, they differ, often quite sharply, on their definitions of education and autonomy.

Montessori (1917/1965), Pestalozzi (1827/1850) and, to some extent, Froebel (1912) all define autonomy as an act or decision in the context of a social setting. They examine personal or psychological independence in the larger societal context. Both Montessori and Pestalozzi refer to autonomy as morality, conscious choice, or guided freedom. According to Montessori (Standing, 1962), the development of independence implies the growth of a self-conscious will. Montessori contends that at no time should children be abandoned to do whatever they want, but that they should be taught to behave independently in a carefully structured environment where the 'right' choice is inherent in the activity. She believes that children do not learn best from making serious and painful mistakes but from making proper decisions under the guidance of one who is concerned.

Dewey (19 7) views all of education in the light of "the continuity of developing experience (p. 43). For Dewey, personal autonomy is the gradual outgrowth of the interaction of the individual with his or her environment. The growth of independence comes from an understanding of the consequences of action. Dewey is concerned with the balance of personal independence and the need for social control. He views the experience of control not as something from which to rebel, but as an integral part of learning. Changes in control lead to changes in experiences. The way in which control is integrated into experience and internalized by the student is a major point of concentration for Dewey. Autonomy is the child's continual and growing assumption of responsibility for learning and action. Autonomy is not an end in itself.

While Montessori and Dewey emphasize a balance between personal freedom and social freedom, Neill (1960) states that "no one can have social freedom, for the rights of others must be respected. But everyone should have individual freedom" (p. 356). Of course, part of the difference is semantic, reflecting not so much a difference of opinion about the relationships between the individual and society, but a difference about what constitutes freedom (or independence). Dewey and Montessori define independence in the context of social institutions, whereas Neill defines it in the context of the individual.

Developmental view of autonomy. While neither Erikson nor Piaget would deny the importance of a social setting (such as the school) in which a child can develop autonomous behaviors, they do not concern themselves with manipulating these environments to uncover the most supportive ones. As developmental psychologists, Erikson and Piaget do not stress the direct teaching of autonomy, the overt manipulation of environmental supports, but concentrate on observing and describing the emergence of independent behaviors from birth to adolescence.

Erikson describes autonomy as starting very early--as soon as the child exercises the muscular control of "holding on" and "letting go." Erikson (1968) states that it is then that ". . . the still highly dependent child begins to experience his autonomous will" (p. 107). Conditions for the development of autonomy require strong support of the infant's sense of trust. Clearly, Erikson focuses on the child's personal sense of autonomy, but he recognizes the social nature of the growth of that autonomy. In general, Erikson describes autonomy as developing to the degree to which the child experiences success in controlling the environment within and without. "As his environment encourages him to 'stand on his own feet' it must protect him against meaningless and arbitrary experiences of shame and early doubt" (Erikson, 1963, p. 252). Thus, we can presume that Erikson would view the role of education as supportive and facilitative rather than serving the modeling function of Montessori.

Like Erikson, Piaget (1932/1965) acknowledges the social nature of the growth of autonomy, or in his words, "the obvious correlation between cooperation and the consciousness of autonomy" (p. 95). Although Piaget never describes explicitly the development of autonomy in the child, it can be inferred from his discussions of the growth of moral judgment that he considers autonomy as a decision integrally bound with social interaction. According to Piaget, the child's entry into school, an environment which encourages social involvement with peers, introduces changes in the child's life that aid him or her in making decisions. Freed from the constant supervision and constraint of parents and encouraged to spend increasing amounts of time with peers, the school child begins to escape from the belief that the opinions of adults are binding and immutable. Thus, the child gradually adopts a position of equality where s/he has the ability to make decisions and take responsibility for them. Piaget (1932/1965) describes this change as moving from the stage of "unilateral respect and the coercive rule" (p. 90) to that of "mutual respect and rational rules" (p. 94). Through peer interaction, the child is exposed to divergent points of view and discovers that the ideas promulgated by parents are not the only way of viewing the world. The conflict between what the child has been taught to think and the views of others forces the child to reassess his or her own opinions and decisions. In short, through cooperative social interaction, where the child comes to understand disparate points of view and relinquishes dependence upon adult authority, the child becomes better able to make decisions concerning his or her own personal opinions.

Although developmental psychologists have provided evidence that independence in children emerges naturally, educational clinicians have encouraged our belief that this process can be augmented by placing children in environments that maximize their opportunities to behave autonomously. Teaching autonomy may benefit the children whose natural growth of independence is deficient in some way, as well as enhance growth in children whose development is proceeding at a normal pace.

Empirical Definitions of Autonomy

We now turn to the task of drawing out the definitions of autonomy that underlie a rather large body of recent empirical and experimental research. In a sense, the literature we have just reviewed is both empirical and experimental. however, the work we are turning to tends to be more limited in scope, thus more in line with studies that are currently referred to as empirical and experimental. Generally, this research falls along a continuum from studies emphasizing the significance of environmental opportunities for autonomy to studies emphasizing autonomy as a personality characteristic.

Conditions supporting autonomy. In some of the empirical and experimental research (Flanders, 1967: Moore, 1972; Norton, 1970), autonomy is defined in terms of the classroom conditions that provide opportunities for independent student behavior. This research reveals that opportunities for autonomy arise from a number of sources, such as the instructional program, teacher behaviors, and student perceptions of learning goals: Moore (1972) describes the ways in which various instructional programs are managed with respect to the number and variety of opportunities provided for independence. In this context, he defines autonomy as the degree to which instructional programs provide opportunities for students to assume responsibility for initiating, directing, and evaluating their own learning activities. Flanders (1967) considers independence as those classroom conditions in which "pupils perceive their activities to be 'self-directed'" (p. 108). The environmental conditions that Flanders studies are teacher behaviors and student perceptions of learning goals. Norton's (1970) work in student autonomy combines that of Moore and Flanders. He is concerned with the influence of both teacher practices and instructional programs on student independence. He defines independence as the conditions under which students establish the content, aims, and rewards of their learning activities. All three of these researchers view autonomy as a dynamic state, a state that can be altered by changing the environmental opportunities, i.e., by providing more opportunities to behave autonomously. However, each focuses on different aspects of the environment.

Unlike Moore, Flanders, and Norton, who determine the degree of educational opportunity for autonomy by directly describing the environmental conditions, other researchers (Columbia Classroom Environments Project, 1971, Goldupp, 1972) determined opportunity by observing the behavior of children in a setting and by inferring from these behaviors the condition of the environment. In other words, although they are concerned primarily with educational opportunities for independence, these researchers define autonomy not in terms of environmental conditions, but in terms of the behavior of individuals in the environment. This behavioral evidence indicates indirectly the degree to which the particular conditions support autonomy. Goldupp (1972) defines autonomy as the extent to which children carry out learning tasks in a socially acceptable manner without the supervision of controlling adults. She is concerned with the degree to which children manifest self-motivating and self-directive behaviors when placed in such a situation. If they display these behaviors frequently, they are described as independent and the educational setting is claimed to support autonomous behavior. Although Goldupp considers self-initiative and self-directive behaviors as important descriptors of independence, she fails to discuss self-evaluative behavior which is also a major part of autonomous learning and is included in the definitions offered by Moore, Flanders, and Norton. In the Columbia Classroom Environments Project (CCEP, 1971), autonomy is defined as the "control by self of self's thought and action" (p. 5). If the children within an educational setting are behaving autonomously according to this definition, then the program implemented in that classroom is said to provide opportunities for independence.

Kremer, Perlberg, and Peleg (1975) define autnomy in terms of classes of behaviors and then use this information to develop a strategy for teaching independence. Like Goldupp and CCEP, Kremer et al. define autonomy in terms of behaviors (rather than environmental conditions): however, they use their defintion not to make inferences about the environment, but to suggest ways to teach independence within a given setting. They identify three independent behaviors: (a) identifying problems, (b) raising questions, and (c) deciding how relevant a question is to the problem at hand by ordering the questions with respect to the similarities among them and the problem to be solved. Clearly, asking the "right" questions is an important part of independent learning, but other behaviors should be considered as well.

The empirical and experimental research on autonomy either focuses on the environmental conditions that support independence or examines autonomy as a personality characteristic. Having reviewed the literature in the former category, we turn to the research where there is an attempt to determine the degree to which an individual behaves independently. Unfortunately, no one has investigated both of these dimensions simultaneously. In the last section of this paper, we hope to alter this situation by suggesting a strategy for studying autonomy from both angles.

Autonomous individuals. Among those researchers who are concerned with autonomy as a personality characteristic, some define independent behaviors directly. Others describe autonomy indirectly through definitions of dependence or perceptions of independence and from these definitions make inferences about the nature of independence.

Both Banta (1970) and Krimerman (1972) define autonomy directly. While Banta's definition of autonomy is quite narrow, concentrating on independence within a restricted setting, Krimerman's definition is broad, delineating criteria for determining autonomous actions. According to Banta, autonomous behaviors are "self-regulating" and facilitate effective (both efficient and expedient) problem solving. The degree to which a child is considered autonomous is related to the number of independent behaviors s/he exhibits in a controlled setting. Although Banta claims to be concerned with autonomy, we suggest that he may be focusing instead on creativity in problem solving. Clearly, finding unique solutions to problems may be autonomous behavior. However, it is not the uniqueness of the final solution that is a measure of autonomy. It is the independence of the generation of the solution that indicates autonomy. Krimerman defines autonomy more broadly as human behavior that is voluntary and purposive. He advances a "science of autonomy," a program for studying human freedom that adheres to the criteria of scientific inquiry. In so doing, he generates a list of criteria for distinguishing autonomous acts from those that are not. Even though his main focus is to categorize single actions as either autonomous or not autonomous, he suggests that the degree to which an individual is autonomous can be determined by the frequency with which s/he behaves in a purposive and voluntary manner.

Deriving the definition of autonomy indirectly. Another group of researchers, who consider the personal aspects of autonomy rather than the environmental ones, examine autonomy indirectly. This group is composed mainly of psychologists who examine autonomy either from its reflection, dependence, or through the perception of independence, locus of control. For the most part, the dependence research consists of behaviorally based studies, whereas the locus of control literature encompasses studies in which individuals report perceptions. By focusing on behaviors and perceptions and by considering them stable, these researchers tend to ignore or minimize the significance of the environmental setting in eliciting independent behaviors. Thus, an implication of these definitions where behaviors and perceptions are considered stable personality characteristics is that educational environments do not have a major effect on a child's behavior.

There are two main reasons why psychologists have investigated dependent rather than independent behavior. First, during infancy and childhood, dependent behavior is the natural state (Erikson, 1968). As a result, those researchers who have attempted to explain child development have focused on the dependent relationship between children and adults. Second, in the later years of life, independent behavior is considered normal, whereas dependent behavior is viewed as abnormal. Because of clinical concerns, psychologists have focused on antecedents of the maladaptive behaviors. In addition, since independence and dependence are typically viewed as opposite poles on the same continuum, psychologists assume that information about independence is accumulated while investigating dependence.

In situations where individuals are actually able to perform their activities unaided, dependent behavior is defined as the reliance on others for approval, help, reassurance, or attention (Hartup, 1963; Maccoby & Masters, 1970, Parke, 1969). This definition corresponds to Heathers' (1955a) definition of emotional dependence. Heathers distinguishes between emotional and instrumental dependence. The former involves seeking social responses from others as a goal in itself and the latter involves eliciting help from someone in order to reach a goal. This distinction echoes Rousseau's (1762/1963) differentiation between dependence upon physical things, which he does not consider "real" dependence, and dependence upon people, which he views as limiting, dependent action. Psychologists tend only to examine dependence on other people. Thus, from the definition of dependence, it can be inferred that an independent child does not rely on others for approval, help, or reassurance when capable of carrying out an act unaided. This assumes that a child knows when to ask for help and when not to do so. In other words, the more autonomous a child is, the more ability s/he has in predicting his or her capability to carry out a certain act unaided.

Although many psychologists consider dependence and independence as opposite poles of a behavioral dimension, others view independence as more than just a lack of dependence. Beller (1955, 1957) suggests that independence and dependence are not on the same continuum because "conditions of learning might favor simultaneous increase of both dependence and independence in many children" (Beller, 1957, p. 287). Parke (1969) concurs by stating that "independence often suggests that certain positive features characterize a child's social behavior as initiative, self-assertion, unaided and effortual striving, in addition to infrequent attempts to gain nurturance" from others (p. 302).

Independence can also be studied by eliciting judgments about how autonomous an individual thinks s/he is, on the assumption that one's perception of independence can affect one's behavior. Psychologists treat these perceptions as stable dispositions and identify individual differences that make it possible to locate individuals on a continuum. Individuals at one end of the continuum perceive the outcomes of their behavior as a consequence of their own actions, that is, they perceive themselves as having an internal locus of control. The individuals at the other end perceive the outcomes of their behavior as a result of external factors, that is, they perceive themselves as having an external locus of control. Rotter (1966) suggests that a person's perception of the extent to which s/he has control over the environment has an affect on his or her behavior. Studies showing a relationship between perception of independence and independent behavior support Rotter's assumption (Bottinelli & Weizmann, 1973; Nowicki & Strickland, 1973).

These descriptions of autonomy indicate that the construct includes more than mindless actions. Some popular interpretations of autonomy rest on the assumption that an autonomous person is one whose actions cannot be predicted or whose behavior is random. Adopting such an interpretation is not useful if the goal is to study autonomy because such a definition indicates that it can be neither taught nor studied when seen as a random and unpredictable phenomenon. From our review, we can see that a complete consideration of autonomy must include information about sets of actions, the individual performing the acts, and the context in which the actions take place.

Issues and Strategies

In this section, we discuss the major issues that emerge in the process of teaching students to become autonomous and in the course of studying autonomy. We also examine the major strategies for investigating those issues. While the definitions of autonomy are varied, ranging from broad-based theoretical ones to narrower empirical ones, the major issues cluster around the means of teaching autonomy and the studying of autonomy as a characteristic of a person or an environment. The issues involved in the teaching of autonomy center around designing educational settings in which children can develop independence. The issues that emerge from studying autonomy relate to the assessment of environments and to the assessment of individuals and their actions.

Teaching Autonomy

An assumption that is made about the teaching of autonomy is that a child can learn to become more independent, at least with regard to specific situations. No universal assumption is made concerning the way in which this should be accomplished. In other words, given that a major goal is to develop the independence of the student, different strategies emerge for achieving it. These strategies differ in the degree to which the educational setting intrudes in modeling "correct" behaviors.

One group, typified by Montessori (1917/1965), stresses the construction of an educational environment that guides children toward correct decisions and that provides feedback about the decisions. Montessori contends that in order for children to learn to assume responsibility for their decisions, they need to be exposed to correct principles and then learn why their actions are right.

According to Montessori, it is in this way that children develop a sense of responsibility for their decisions, not because they feel coerced to do so, but because they understand the correctness of their choices.

Another group, represented by Dewey and Neill, believes that far less systematic information needs to be built into the environment and relies on the consequences of action to teach the student. Neill (1960) and Dewey (1963) agree that children should learn to be independent or responsible for their actions by virtue of their mistakes as well as from the outcomes of their correct decisions. Children learn about the constraints on their own individual independence by realizing (gaining feedback from) the effects of their actions on others and on themselves.

Montessori, Dewey, and Neill all perceive children as growing organisms who must learn to be independent for their own good as well as the good of society. Although Montessori's approach for teaching children independent behaviors differs from that of Neill and Dewey, all three concur that this can be accomplished by creating educational environments which provide opportunities that support autonomy. In contrast to educators who focus on designing educational settings, others concentrate on studying these environments empirically.

Between these two groups lies the unique work of Wang (see Wang, 1974, Wang & Siegel, 1975, Wang & Stiles, 1975a, 1975b). Wang bridges the gap between those who create and those who examine educational environments by attempting both tasks. In addition to building and describing these environments, she studied them empirically. In the process of merging several individualized curricula into a cohesive, adaptive program, Wang restructured the use of time by taking what had traditionally been divided into subject matter periods and merging them into a single time unit. Within the larger unit, the children themselves determine the amount of time to spend on a specific task and the sequencing of learning activities. Moreover, for a certain proportion of the activities, children are permitted to decide the content of the task. Thus, a typical classroom has children working on many different activities. Some of the activities have been identified by the teacher, but the time of doing them is determined by the child. other activities are actually chosen by the child. Over a four-year period, Wang set up and studied several classrooms of children from three to eight years in age (Wang & Stiles, 1975b). Wang's work on these classrooms addresses several concerns beyond the initial, organizational ones. She advocates constructing educational environments which support the student's independence from the teacher in the performance of a range of assigned tasks and in the definition and evaluation of new activities. But the work goes beyond development and into experimental research on these environments. The results of her work lend support to the idea that if the environment systematically[2] supports autonomous behavior, the children not only act independently, but also perceive their acts as independent.

Educators who deal with the issue of teaching autonomy agree that educational environments can and should be designed to support the growth of independence in children. However, the environments they create differ. Clearly, there is not just one best environment for teaching autonomy, but a variety of classroom situations that offer opportunities for children to act independently. The practical work of Dewey at the Laboratory School, Montessori at Casa des Bambinos, and Neill at Summerhill provides evidence for the necessity and possibility of systematically developing independence in children by providing opportunities that foster autonomous activity.

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[2] With respect to "systematically," Wang bridges Montessori and Dewey, for she describes a carefully constructed environment that permits the child to learn from mistakes.

Assessing Environmental Opportunities for Autonomy

The autonomy of the developing child in an educational setting is the concern not only of educational developers but also of researchers. Although some researchers (especially psychologists) who study autonomy view it as a stable personality characteristic, others perceive independence as a changeable, dynamic, teachable phenomenon. It is useful, therefore, to describe and study educational environments that provide opportunities for independence, the child's utilization of these opportunities, and the effect of this utilization on the probability of the child's continuing to behave independently in the future. No one researcher has considered all of these topics in a comprehensive fashion. Each investigates the one topic that is most compatible with his or her own view of autonomy.

Moore (1972) examined instructional programs in order to assess the degree to which each provides opportunities for students to behave independently, i.e., to control the preparation, execution, and evaluation of their own learning activities. Moore asserted that opportunities for the student to assume responsibility for learning can occur only in instructional programs in which the teaching behaviors are executed apart from the learning behaviors. He labeled this kind of instruction "distance teaching" and explained that such an approach requires that communication between teacher and learner be carried out through written, electronic, or mechanical media as in television, programmed, computer-assisted, or correspondence instruction. Moore reviewed some 2,000 articles describing instructional programs involving distance teaching and classified each according to whether it permitted students to control the preparation, execution, and evaluation of learning activities. Although Moore employed his schema to classify instructional methods from written descriptions only, it seems plausible to assume that it could be used for categorizing programs that can be observed directly. Since we are concerned primarily with describing opportunities for autonomy in actual classroom settings, we are interested only in schema that can be used for direct observation.

Goldupp's (1972) interests lie in contrasting a traditional classroom with an open one with respect to the degree of autonomy that each one supports. Unlike Moore, who examined descriptions of educational settings, Goldupp varied the amount of support for autonomy by manipulating the presence of the teacher to determine its impact on student behavior. In other words, she observed and recorded the behaviors of children in both traditional and open classrooms, with and without adult supervision. Then, she noted shifts in the group's behavior from the attended to the unattended situation. A small shift indicated that children work under their own motivation and direction as well as under the motivation and direction of the teacher. She inferred that the smaller the behavioral shift, the more opportunities there were in the educational environment for independent behavior. Given this definition of autonomy, the results of Goldupp's study indicate that open classrooms support more autonomy than do traditional ones. Goldupp observed behaviors and drew conclusions about the classroom in which these behaviors occurred, but stopped short of describing exactly what it was about the setting that caused it to be supportive of independent activity.[7]

The Columbia Classroom Environments Project (1971) was also concerned with assessing the degree to which instructional programs supported autonomous behavior in children. In order to evaluate programs, they developed several observational schemes to record behavior in classroom situations that provided children the opportunity to be independent. Some children used these opportunities, others did not. From these observations, CCEP made inferences about the level of autonomy that a particular program supported. But CCEP comes somewhat closer than Goldupp to describing which specific environmental opportunities affect the independence of the children.

Although Flanders (1967) and Kremer, Perlberg, and Peleg (1975) also studied environmental opportunities for independence, they focused on a subset of the environment, teaching techniques. They examined the ways in which teachers influence a child's independence rather than the ways the instructional program affects his or her level of autonomy. Flanders developed hypotheses concerning the effects of teacher behaviors on the behaviors of the student. He hoped that these hypotheses would contribute to a theory of instruction by identifying general patterns of teacher influence that produce predictable responses in children. Most of Flanders' hypotheses were drawn after intense, systematic observation of teacher and student interactions, but have not been validated by measuring the impact on student behavior.

Kremer et al. (1975) focused on identifying a teaching strategy aimed at increasing teachers' competencies in developing pupil ability and independent learning. Since they believed that independent learning consists of the fluency with which the student identifies problems, raises questions, and determines how relevant the questions are to the problem to be solved, they developed a teaching method based on student questioning. This approach utilized games, simulation, peer teaching, and micro-teaching to optimize opportunity for students to ask questions.

To comprehensively study the autonomy of children, classroom opportunities that support autonomous behavior must be described, utilization of these opportunities must be observed, and the relationship between utilization and the individual's level of autonomy must be determined. All aspects of environmental opportunities should be documented, not just the characteristics of the instructional program (Moore) or teacher influence (Flanders). A greater range of independent behaviors need to be examined, not only self-motivation and self-direction (Goldupp) or question-asking/ability (Kremer et al.). Only by combining the issues can autonomy in an educational setting be properly studied.

Autonomy as a Personality Characteristic

Another group of researchers focuses on autonomy as a predisposition to behave in a particular way. These researchers are interested in observing behavior to determine whether it is autonomous. In general, the concern is not with inferring something about the immediate environment, but with making inferences (from behavioral observation) about an individual's predisposition to act independently.

Both Banta (1970) and Krimerman (1972) studied the autonomy of individuals. Banta defined autonomy as the creative behaviors exhibited by children and studied them in simulated situations where each child is asked to perform manipulative tasks. According to Banta, all these activities require creative "self-regulating" behaviors, i.e., behaviors which lead to efficient and effective problem solving. Banta observed a child in this setting, recorded his or her

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responses to the problems, and determined the strength of the child's predisposition to behave autonomously. The one question that remains unanswered is whether these behaviors will be maintained in a real classroom setting (rather than a simulated situation) with cognitive (rather than manipulative) opportunities to solve problems.

Krimerman (1972) employed a list of behavioral characteristics (criteria) to determine whether any discrete act or decision was autonomous. If an individual manifested the identified behaviors, s/he was considered independent. otherwise, the individual was not characterized as autonomous. Thus, Krimerman introduced the significant idea of cumulative behaviors as the descriptors of personality.

Psychologists focus on the personality characteristic aspect rather than the environmental dimension of autonomy. However, they do not define autonomy directly and then study it. For reasons suggested in the definition section, psychologists deal with independence through its reflection, that is, dependence. Most of their studies focus on the problems of whether dependent behavior is (a) innate or learned, (b) stable or unstable, or (c) unidimensional or multidimensional. The first two concerns are of importance to educators who focus on teaching independence or on studying environmental supports. These researchers need to know about the nature of an individual's independence before they can create or examine educational opportunities for independence to be manifested. Teaching autonomy or providing environmental supports for it depend on the extent to which autonomy can be modified through programs and social structures in the classroom. The latter concern is especially significant for the investigation of the impact of environmental manipulations.

Origins of dependence. Psychologists hold two positions about the origin of dependence. Some view it ~~as~~ instinctive, whereas others view dependence as a learned characteristic. According to psychoanalytic theory (Erikson, 1963, 1968, Parens & Saul, 1971), the nature and form of dependence is a consequence of developmental fixations. In other words, the instinctual behaviors that emerge during a child's development can, at times, be disrupted by the environment, e.g., parental control. These developmental disruptions result in the formulation of an individual's personality. At the earliest stages of life, dependent behavior is necessary for self-preservation. While this dependence is universal during early childhood, in later development, independence begins unless the child's development has been disrupted in some way during the stage of dependency. This disruption results in the retention of the characteristic of dependence even during adulthood. Erikson (1963, 1968) identifies the earliest stages of anal muscle coordination as the point at which independence naturally begins.

Another group of theorists, typified by Bowlby (1958, 1969), suggests that the infant has an innate tendency to seek affectional proximity with another person. This tendency develops in every human being because it is a necessary act of survival. In contrast to psychoanalytic theory, Bowlby adds that the nature and form of dependence are consequences of the characteristics of the environment rather than developmental fixations. It is interesting to note that while these psychologists view dependence as the natural, original state from which humans emerge, Rousseau views independence as the natural state of childhood that is often corrupted by society into dependence.

In opposition to these instinctive theories of dependence, a third group of researchers contends that dependence is learned and that early childhood is the crucial learning period. These theories attribute the differences among individuals in dependent behavior to the unique set of experiences and learning opportunities of each individual. Although researchers used to hold the position that dependence was a drive, that view has lost acceptance in the last decade and has been replaced by the position that dependence is a habit or a set of reinforced behaviors. Originally, advocates of the drive model (Bandura & Walters, 1959; Gewirtz, 1956a, 1956b; Sears, Whiting, Nowlis, & Sears, 1953) described dependence as a secondary drive derived from the spontaneous character of dependent responses that are increased in situations where nurturance or affection is withheld and increased in cases where substantial nurturance is given. However, in their later writings, Bandura and Walters (1963), Gewirtz (1961, 1972), and Walters and Parke (1964) describe dependence as habit or a set of behaviors acquired as a result of some combination of general anxiety or arousal effects, modeling phenomena, and/or operant learning through direct reinforcement.

Stability of dependence. Both the instinctive and the learning theorists treat dependence as a stable characteristic. While the latter emphasize the environmental factors in the development of this predisposition, the former tend to minimize them. According to both approaches, school-aged children have already acquired stable dispositions to behave dependently or independently and educational programs cannot be expected to affect this behavior.

In recent years, however, psychologists have changed their view that personality characteristics are stable. Some research (see Endler, 1973; Mischel, 1968, 1973) has shown that while behavior is partially derived from certain dispositional tendencies, it can be affected by a variety of stimulus conditions and modified by environmental changes. Such a position suggests that the dependent behavior of an individual is affected strongly by situational cues. A person is expected to behave consistently across situations only to the extent that similar behavior leads, or is expected to lead, to similar consequences across those conditions (see Mischel, 1973). Knowledge of individual differences alone often tells us little about how a particular individual will behave unless it is combined with information about the conditions that influence the behavior. In investigating dependent or independent behavior, it is necessary to understand the structure of the situation that may encourage or discourage such behaviors. Using this as a basis, we can extrapolate to children in the classroom who can be expected to exhibit different behaviors under different sets of conditions.

Dimensionality of dependence. Another concern of psychologists is the dimensionality of dependent behaviors. They examine the issue of whether dependence is unidimensional, that is, a single set of highly correlated behaviors, or whether it is multidimensional, that is, multiple sets of uncorrelated behaviors. Several studies report high intercorrelations among different measures of dependence (see Beller, 1955, 1957), others do not (see Gewirtz, 1956a, 1956b; Heathers, 1955a, 1955b, Sears, 1963). Maccoby and Masters (1970) noted that there is a lack of consistency among different measures of dependence when direct observation was used and a fairly high degree of consistency when self-ratings were used. A possible explanation for the differences of these findings is that observations are based on specific behaviors usually without standardization of eliciting conditions, while ratings tend to be global and affected by the general impression of the rater.

In this section, basic issues surrounding autonomy in education have been reviewed. What are the components of autonomous behavior?

Can autonomy be taught? If it can be taught or is susceptible to changes in the environment, how should one teach it? If autonomy can be taught, how do we best construct and assess an environment with respect to it--by measuring the environment directly or measuring the impact on children or both? If autonomy is not susceptible to teaching, what is its nature and how should it be measured? In reviewing the major issues surrounding autonomy, we have seen that it is necessary to simultaneously gain information about the type of environment under consideration and the individual's behavior in that environment.

If autonomy is a totally stable characteristic determined either at birth or at an extremely early age, then it is not an issue for educators (at least not a manipulatable one). On the other hand, if autonomy is totally situation-specific, varying almost randomly in each circumstance, then again it is not an outcome on which educators must spend time. One of the major problems in considering outcomes that are beyond the usual purview of education is that features that are common to cognitive outcomes may no longer hold. We assume, for example, that if a child learns to read in one classroom, the basic skill will remain unchanged in a new setting. This is not the case for social, emotional, or attitudinal skills. Clearly, we feel that environments which support autonomous behaviors are likely to have an impact that is somewhat durable. We feel researchers should concentrate on how to assess individuals' behaviors and environments with respect to autonomy in order to increase the probability that individuals will exhibit autonomous behaviors.

Instrumentation

It is clear that the study of autonomy is complex. There are a variety of definitions for autonomy, numerous issues that relate to autonomy, as many investigative strategies as there are issues, and a great many techniques available for assessing autonomy and related constructs.

The systematic investigation of autonomy has been strongly influenced, if not circumscribed, by the specific instruments used to measure the phenomenon. As is often the case, instruments originally constructed to estimate a phenomenon eventually begin to define the scope and substance of it. Probably the most blatant example of this is intelligence tests. More subtle examples are instruments that purport to measure nonverbal communication and motivation. Both of these constructs have become defined by their measures rather than the other way around.

The literature on autonomy reveals that the three methods most commonly used to measure independence are observation, self-report, and projective techniques. These techniques vary in the directness with which they tap the construct they are intended to measure. For instance, measurement is most direct with observation schedules because they facilitate the recording of directly observable behaviors. Measurement with self-report instruments is less direct because it requires an individual to report behaviors that have not been observed. Finally, the least direct measurement technique is projective. This technique requires an individual to react to a stimulus that does not describe the behavior of interest, but from which the behavior is inferred. In this section, we examine the techniques that have been developed to measure autonomy and related constructs and discuss the limitations that they impose on the concept of autonomy in education.

Observation Schedules

A wide variety of schedules for observation including checklists, frequency counts, and rating scales are used to record an individual's independent behaviors in particular circumstances or to describe the situational opportunities that support such behaviors. The settings in which these observations are made range from naturalistic to simulated ones. Although the directness of measurement with observation schedules insures face validity, the specificity of the situation being observed limits the generalizability of the findings. However, the limitations of this technique do not seem to restrict its use by researchers attempting to measure environmental opportunities that support autonomy or psychologists measuring the characteristic of dependence.

The majority of researchers involved with delineating the opportunities supporting independent behaviors use observation schedules (CCEP, 1971. Goldupp, 1972; Moore, 1972). Moore's (1972) instrument is a checklist for recording whether programs of instruction provide opportunities for students to control various aspects of their learning. Moore breaks down the process of learning into three stages: preparation, execution, and evaluation. By observing an instructional program directly or by reading a written description of the way it is supposed to operate, a trained individual can determine whether the program provides opportunities for a student to prepare, execute, and evaluate his or her own learning activity. Thus, each instructional program is associated with a triad of the letters A and N (A represents autonomous, N stands for not autonomous), each letter indicating whether the student can carry out each of the three stages of learning. For example, a program described as "NAN" on Moore's instrument provides opportunities for students to control the execution of their learning activities, but does not permit students to initiate or evaluate the activity. Moore's approach to the measurement of environmental opportunities for autonomy has two weaknesses. First, the schema lacks detail. It can be used only to classify programs on a very broad basis. The categories need to be refined so that instructional programs can be rated on a multipoint rating scale rather than a simple dichotomous one. Second, Moore's schema concentrates on the provision of the opportunities for autonomy and neglects the issue of whether these opportunities are utilized.

The instruments created by Goldupp and CCEP are used to determine how much independent activity a particular environment supports. Using these observation schedules, an individual can keep a record of the behaviors exhibited by children in a fairly unaltered classroom setting and from this record s/he can infer the degree of autonomy that the environment supports. With Goldupp's (1972) observation schedule (Classroom Attitude Observation Schedule, CAOS), a trained observer can scan a classroom and record what each child is doing and with whom s/he is working. The categories of activity range from working on a variety of academic subjects or artistic projects to manifesting inappropriate behaviors such as yelling, wandering, interfering with another child's work, etc. By recording the children's activities both when there is a teacher present and when there is not and by analyzing any shifts in activities between these two observations, Goldupp infers the level of autonomy that the environment supports. The problem with Goldupp's approach is that those specific characteristics of the setting that support independent activity are not delineated.

The Columbia Classroom Environments Project (1971) developed several complex schema with which a trained observer can record the behaviors of individual children in a real classroom setting or in a simulated one. From these recorded behaviors, the degree of autonomy that the environment supports can be inferred. Of the five CCEP observation schedules (BORIS, IRIS, JURIS, BESIS, and PRIN), two, JURIS and PRIN, are especially relevant to autonomy and locus of control. JURIS permits an analysis of students' self-descriptions in terms of how they describe interactions between themselves and others (see CCEP, 1971, pp. 87-105). PRIN permits an analysis of students' self-descriptions in terms of internal or external control (see pp. 152 and following).

Psychologists tend to rely on observation as a method for assessing the degree to which an individual is dependent rather than independent. In naturalistic settings, psychologists observe and record children's dependent behavior toward teachers, parents, and peers (see Heathers, 1955b; Sears, Rau, & Alpert, 1965). The observation schedules used in these studies enable an individual to monitor the frequency and magnitude of those behaviors that reflect the child's need for affection, attention, approval, help, or physical nearness. Frequently, psychologists create artificial situations in laboratories where they can observe and record dependent behavior (see Gewirtz, 1956a, 1956b, Heathers, 1953, Smith, 1958). For example, Smith (1958) brought mothers and their children to a laboratory where the children were observed through one-way mirrors while playing with toys. The observers recorded both the type and frequency of the child's responses that were directed to elicit help or attention from the mother. Occasionally, researchers employ more subjective methods such as rating scales to record observations. In several studies (Beller, 1955; Hartup, 1958), teachers or peers are requested to observe an individual and to rate that individual on the degree of independence s/he exhibits. Clearly, the danger in using rating scales to judge observations is that a "halo" effect may occur, threatening the validity of the ratings.

Self-Report Instruments

The self-report technique is a less direct method of measurement than observation. While observation schedules are used as a framework to observe and to record behaviors manifested in a particular situation, self-report instruments require the respondent to tell about the way s/he would behave in a particular situation or about perceptions of the way s/he has behaved in a past situation. From such a report, those behaviors that the respondent would actually manifest in the situation must be inferred. Within the area of autonomy, few self-report instruments have been developed to measure independence, but several have been created for measuring the related constructs of dependence and locus of control. With these instruments, researchers claim to be measuring an individual's predisposition to behave in a particular way. In other words, researchers feel that self-report instruments can be used to tap a stable trait or personality characteristic. Since most researchers believe traits to be independent of surroundings, the instruments are not situation-specific but can be administered under any circumstances. Some of these instruments have been adapted for use with small children although they were not originally developed specifically for them. The majority of self-report instruments use rating scales or multiple-choice questions.

Three instruments designed to measure independence were constructed by Jones (1967), Groth (1972), and Wang and Stiles (1975a). Since Jones defined autonomy as the reverse of authoritarianism, he was able to construct an instrument for measuring autonomy by simply reversing the California F-scale items that measure authoritarianism.

The new instrument is referred to as the Pensacola Z-scale. The 66 Z-scale items require that a respondent describe his or her behavior, values, and self-concept. Each item on the forced-choice questionnaire has two possible answers: One is an independent choice and the other is an authoritative or dependent one.

Groth's (1972) instrument requires the subjects to select three people from a list of six (God, governmental leaders, parents, teachers, friends, myself) who are most important in determining how they deal with specific problems. Those who choose myself as first choice are considered autonomous. Although the instrument created by Wang and Stiles (1975a) also measures independence, it is different from the other two because it is an interview rather than a self-administered questionnaire; it is also situation specific. The interview, the Self-Responsibility Interview Schedule (SRIS), consists of a series of open-ended questions about what tasks the child is carrying out in the classroom and who has responsibility for the selection of these tasks. The degree to which the child expresses that s/he, rather than the teacher, controls his or her own learning indicates the degree to which the child is autonomous. In a similar but less extensive fashion, Leinhardt (1972) used open interviews with children to assess the environmental support for autonomy.

Self-report instruments are used more widely to measure those constructs related to autonomy. Some researchers attempt to assess dependence using selected response patterns from long inventories of questions. For example, Navran (1954) used portions of the Minnesota Multiphasic Personality Inventory (Hathaway & McKinley, 1942). Likewise, Cairns and Lewis (1962) extracted portions of the Edwards Personal Preference Schedule (Edwards, 1953) in order to measure dependence. Others attempt to measure locus of control, the extent to which a person perceives himself or herself as independent, using self-report instruments that incorporate rating scales. The one used most widely for adults is the Internal-External Control Scale (Rotter, 1966). Those employed primarily with children are Bialer's Children's Locus of Control Scale (Bialer, 1961), Intellectual Achievement Responsibility Questionnaire (Crandall, Katkovsky, & Crandall, 1965), and the Nowicki-Strickland Scale (Nowicki & Strickland, 1973). Although the self-report instruments that have been developed to measure autonomy and its related concepts are numerous, they are generally unsuited for the assessment of autonomy in educational settings not only because few are designed for children, but also because even fewer are designed to be sensitive enough to measure differences in the educational environment.

Projective Tests

The projective technique, the least direct method of measurement, is used by psychologists attempting to measure the trait of dependence. Projective tests consist of unstructured stimuli to which an individual is required to respond with the assumption that the responses indicate a tendency to behave dependently. In other words, the users of projective tests assume that a deeper truth about an individual's need to be dependent is revealed through a projection of personality onto a neutral stimulus. These tests have low face validity because they are neither a framework with which to observe dependent behavior nor do they directly pose any questions about dependence. Despite their low face validity, the results obtained from these tests are considered to be generalizable over a wide variety of situations.

To measure dependence, both Fitzgerald (1958) and Kagan and Mussen (1956) used the Thematic Apperception Test developed by

Murray (1943). Levitt, Lubin, and Zuckerman (1962) employed the Rorschach created by Klopfer and Kelly (1946). Ruebush and Waite (1961) used the Holtzman Inkblot Test (Holtzman, 1958). Two other projective measures of dependence, requiring written rather than verbal productions on the part of the subject, are the Sun Drawing Test (Loney, 1971) and the Sentence Completion Test (Lanyon, 1972). For all of these tests, the responses of the subjects must be interpreted in terms of an established coding system. The advantage of measuring with projective tests is that they tend to be resilient to day-to-day fluctuations. Thus they can serve as a useful diagnostic tool for clinical intervention in cases where an individual tends to be abnormal with respect to dependence. For precisely that reason, however, these tests are not useful for assessing the development of independence in children in classrooms.

We have reviewed three types of instrumentation observation, self-report, and projective. Each type yields different information and restricts, to some extent, what is meant by autonomy. Whether categorical frequency counts or ratings, observation schedules tend to be flexible and situation-specific. However, they do not yield information about the thought processes or decision making of a child because they reflect only exhibited behaviors. Whether forced-choice or open-ended interviews, self-report instruments reflect a perception of past or future behaviors. They tend to be more general and less situation-specific than observation schedules. They do not generate information about actual behaviors, only reports of behaviors. Projective tests generate information about an individual's personality of which the individual may or may not be aware or with which the individual may or may not agree. In some cases, the results of these tests may be predictive of general tendencies toward certain behavior patterns. Currently, the observation and self-reporting techniques seem to be the most promising devices for studying the impact of educational efforts in developing student autonomy.

Approach to the Further Study of Autonomy

Having considered the various definitions of autonomy and having examined the major issues, strategies, and instruments that have been suggested for its investigation, we are in a position to propose our own strategy for studying student autonomy in the classroom. We do this without formulating a rigid set of rules to be followed but with hopes that we will provide some clarity and structure to the subject by offering a way in which to proceed.

Towards a Definition

According to our definition, autonomy can be manifested in a situation in which a choice is available to the child. This choice must include at least two realistic alternatives. Further, the child must be aware of the choice, have the capacity to consider the consequences of the available alternatives, and have the ability to seek information about either the choice or the consequences. Finally, we limit our discussion to choices that the child makes in classroom situations.

We assume that children differ in their tendency to behave autonomously when given the opportunity to do so. We take for granted that this tendency can increase or decrease depending on the environment to which a child is exposed. Further, we assert that a child's tendency to behave independently will increase if that child is exposed to an environment which permits more rather than less independent behavior, regardless of the degree to which the child was initially an independent person. In other words, given two children with similar tendencies to be independent, the child in the more supportive and instructive environment will develop more autonomous behaviors than the other.

Actions can be autonomous only in situations in which there is the possibility of "informed" choice. At a minimum, such a situation exists when there is a choice between doing and not doing something. At a maximum, such a situation exists when the action to be engaged in is generated by the individual, the manner of executing it is decided by the individual, and the assessment of the act is made by the individual. In this case, the individual identifies the goal, defines the mechanisms for reaching it, and assesses the success of the attempt to obtain the goal. In educational settings, such situations are rare and those that exist are difficult to observe.

In order to use a definition of autonomy for empirical investigation within a classroom setting, two requirements must be met. First, any attempt to define autonomy must be stated in a way which permits one to draw reasonably direct educational conclusions. Some of the approaches we have discussed are useful as a basis, but they must be transformed into a more practical form. Second, it must be remembered that we are dealing with young children and that we are studying an environment in which adults must take considerable control. Any definition must take these facts into account.

Autonomy is possible when at least two alternatives are realistically available. Thus, in order to study the development of autonomy in educational settings, information is needed not only about the child but also about the setting. The interaction of these two is displayed in Figure 1. The top of Figure 1 is labeled "Utilization of Opportunity." The column headings are "Child Uses Opportunity" and "Child Does Not Use Opportunity." These column headings refer to a child's actions, i.e., they refer to situations in which a child utilizes or does not utilize

		UTILIZATION OF OPPORTUNITY	
		Child does not use opportunity	Child uses opportunity
OPPORTUNITY PROVIDED	Child is given control	dependence	independence
	Child is not given control	obedience	disobedience

Figure-1 Classifications for the study of autonomy

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opportunities to behave autonomously (makes decisions about the learning environment). The side of Figure 1 is labeled "Opportunity Provided," which indicates whether the opportunity is offered for a child to control or to make choices about various aspects of the environment. These opportunities refer to the implicit and explicit rules of the classroom. The interaction of rows and columns yields four possibilities.

1. A child does not exercise control that is given--that set of actions is considered dependent.
2. A child exercises control that is given--that set of actions is considered independent.
3. A child does not exercise control when that control is not given--that set of actions is considered obedience.
4. A child exercises control when that control is not given--that set of actions is considered rebellion or disobedience.

Clearly, any action can be misjudged because of a failure either to understand the provision or the utilization of opportunity. This scheme is simply an attempt to select among behaviors those that are most likely to be autonomous and those that are least likely to be misjudged.

Two points that should be emphasized are not readily apparent from Figure 1. First, the set of behaviors within any given row or column is continuous and the barriers between cells are somewhat arbitrary. Second, within cells, some behaviors will prove to be more significant than others in terms of how representative they are of each of the four behavioral categories.

A Strategy for Studying Autonomy in a Classroom

Having specified the kinds of situations with which we are concerned, we turn to the development of an approach for investigating autonomy in natural settings. As stated earlier, the work must proceed along two dimensions simultaneously: the gaining of information about the educational environment and about the student. The ultimate goal is to measure changes in levels of student autonomy that are attributable to educational factors and to be able to design the most effective educational environment for the development of student autonomy.

What we propose to investigate is that set of circumstances in which the child exercises control that is given to him or her either implicitly or explicitly (upper right-hand cell of Figure 1). We are excluding from consideration two situations: the one in which a child exercises control which is not given (lower right-hand cell), i.e., when there is disobedience, and the one in which there is obvious obedience (lower left-hand cell). It is possible, of course, that in reality the acts are independent (i.e., the child is exercising conscious choice); however, it would be difficult to assess these acts. Also, we exclude temporarily from consideration the study of autonomy in extremely restrictive environments where all observable assertions of choice are, by definition, disobedience. And, we expect to have to eliminate situations in which the child is allowed to do anything, thus making it difficult to distinguish between simple reaction and premeditated action.

Gaining information about the setting. Given the interactive nature of the environment and the child in determining the degree to which an action is autonomous, it is appropriate to devise a plan for obtaining information about the setting and the child. In order to gain information about the environment, we must generate a comprehensive listing of the opportunities for autonomy. This listing must be general, i.e., usable across a wide variety of settings. To do this, we recommend listing the implicit and explicit rules in widely differing educational settings across a somewhat narrow age band. Currently, we believe that opportunities to engage in autonomous behavior fall into three main categories: (a) Within a classroom there may be opportunities to engage in managerial activities, for example, sharpening pencils, getting paper, and obtaining hall passes. (b) there may be opportunities to take part in social behavior, that is, to decide with whom to work, with whom to converse, and when to start and stop such interactions; and (c) there may be opportunities to engage in cognitive activities, that is, to make decisions about which subject matter to study, how to study it, and at what pace to do so.

To some extent, a hierarchy is assumed among these categories. The opportunities and behaviors surrounding cognitive activities are considered more significant for the development of autonomy and more complex to perform than those surrounding managerial ones. Also, some actions may involve more independence than others, e.g., those acts that are most conducive to the long-range development of independent behavior. However, at this point we have no empirical evidence for differentially weighting them. We will start off by weighting each behavior equally. Eventually, a more formal weighting system or ranking should be empirically developed. This should include information about the probability of an action taking place and the value assigned to the action [illegible] the children and adults. Once a general checklist is developed, a s[illegible]c list can be compiled for each setting in which investigations [illegible] to be carried out. For example, if the general list has 100 opportunities for managerial independence and only 35 of them are applicable (permissible or relevant) for a particular environment, then for the next stages of study, only those 35 would be used. By contrasting the general and specific lists, one can begin ~~to~~ rank environments with respect to the level of support that they provide for autonomy.

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Gaining information about the child. The next task is to develop systematic measures of differences in utilization of these opportunities for autonomy. Among environments having very similar lists of opportunities, we assume that there are substantial differences in the frequency with which the students utilize those opportunities. We assert that this is due in part to (a) the particular students involved, (b) the implicit rules of the classroom that are, of course, more difficult to assess than the explicit ones, and (c) the type of active support given students as a consequence of behaving autonomously.

Utilization of opportunity can be estimated in the following way. As described above, the general checklist may be used to compile a specific list of all the opportunities for student autonomy in a given setting. Then, each child or a sample of individuals may be monitored for a period of time to obtain an estimate of frequency of utilization of each opportunity. This, in turn, yields an estimate of the level of classroom utilization (mean and standard deviation of all children) for each opportunity and an estimate of child utilization for each opportunity. This information permits a refinement of the ranking of environments and a beginning of the ranking of individuals.

We need to reiterate that we are operating at two levels simultaneously, the classroom level and the student level. We assume that there will be differences among and within classrooms and that those differences will enhance or detract from the ability of the students to develop skills in managing their own behaviors. As we stated, we are assuming that the more opportunities children are given for engaging in autonomous behavior, the more likely they are to learn them and to be able to transfer them to new situations. This, in turn, should affect their beliefs about their control of their own environment.

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Developing an Instrument for Measuring Autonomy

Having decided upon a working definition of autonomy and having developed an approach for studying autonomy in natural settings, we turn to the final task of constructing an instrument that permits the measurement of differences in autonomy, that is, differences in children's ability to take advantage of and generate choice situations. Of course, the difficulty is that one does not expect context-free autonomy to develop because autonomy is not a simple skill easily exercised in all environments. For example, if a child is given a great deal of independence in mathematics and little independence in reading or social science, one would expect to find more independent behaviors exhibited in mathematics-related tasks than in other situations (for reasons of opportunity and learning). The main task is to develop a test or simulation that is reasonably related to the kinds of situations the child actually faces, but that is general enough to be relevant for a spectrum of educational settings.

Different stages in a program of research leading to the development of an assessment instrument for autonomy are presented in Figure 2. The goal or objective of each phase of research is described in the left-hand column, while the process used to generate it is described on the right. At two points on the figure, the prior results are used to assess differences and generate hypotheses about the next level of research. Thus, for example, we expect that there will be differences among classrooms (and students) not only in the number (quantitative) of opportunities provided but also in the type (qualitative) of opportunities provided. It will be necessary to examine in depth both types of differences and to utilize these reviews to change and reconstruct the instrument and add, if necessary, new components to the approach (for example, to more clearly differentiate among ways of "teaching" autonomy). What we are advocating is to move through measures of the environment toward measures of the individual.

Goal

Process

Environment Opportunity

Develop general list and major categories of opportunities for autonomy

Observe several classrooms with widely differing practices with respect to student independence to maximize the range of behaviors on the list

Develop specific lists

Observe extensively in one or two classrooms which will be used to study student behaviors

Measure differences quantitatively and qualitatively between environments Generate hypotheses of direction of influence of classroom patterns on development of autonomy

Individual Utilization

Assess degree of utilization of opportunities by children from specific list

Observe extensively each child in a classroom over time noting patterns of utilization across different children

Measure differences quantitatively and qualitatively between children Generate hypotheses about outcomes in future situations

Individual Measurement

Develop simulation tests of autonomy for individuals

Figure 2 An approach to the study of student autonomy.

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The basic assumption surrounding the approach outlined for the investigation of autonomy is that classroom practices will influence the ability of a child to be independent and to control his or her educational environment. We suggest approaching the measurement and assessment of that ability by examining the opportunities for the students to engage in independent behaviors, by observing the actual utilization of these opportunities, and finally, by measuring the relationships between the two.

Summary

This paper has focused on autonomy, one set of many possible noncognitive outcomes of education. Educators and psychologists have long agreed that much more than reading and writing is learned in school. They have also agreed that if other things of value are picked up in educational environments, it might be worthwhile to teach them directly rather than leaving it up to chance. However, there have been several problems attached to this view. First, not many people can agree on what the other outcomes of education are. Second, there is considerable controversy over what types of behaviors are valued by the society. Historically, there has been no mandate for public education to encroach on these private areas of development. (The controversy over sex education is an example of both of these problems.) Third, even if we decide what a noncognitive outcome is (autonomy can be one), it is not clear if it is something that can be taught in the same way reading is taught. When an individual learns to read, the skill is highly transferable to a variety of circumstances, albeit tendencies for greater fluidity with certain types of materials seem to develop. It is not clear that social or personality characteristics will exhibit this feature of transfer. Therefore, attempts to educate for something like autonomy might be a risky undertaking at best. Finally, precise, valid measurement of these areas is in its infancy. Clearly, understanding, teaching, and measuring something like autonomy will be greatly facilitated by carefully analyzing and studying it. This paper is an attempt to begin that process.

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